

which bounds the male pores posteriorly, and is comparable to a rudimentary penis or pair of penes. Of this structure there seem to be the equivalents in a few other species, viz. in *E. sylvestris**, *E. barnimi*†, *E. neumanni*‡, *E. viridescens*, and perhaps *E. toreutus*§. Although the mere thickening which I have figured in *E. ruwenzorii* is different from the projecting penis of *E. viridescens*, the immaturity of my specimen might account for the difference very easily.

But *Eminoscolex ruwenzorii* is to be distinguished from *E. sylvestris* and *E. barnimi* by the fact that the dorsal setæ are further apart than in those species, where the distance *a-b* is three times the distance *c-d*. It cannot be confused with *E. neumanni* by reason of the fact that in the latter species the spermathecal pores are opposite to the lateral setæ, whereas in *E. ruwenzorii* they are, as in the majority of species, in front of the ventral setæ. There remain *E. toreutus* and *E. viridescens*. In the latter species||, however, the spermathecal pores are a segment further back and are placed in a common depression; in *E. toreutus* the spermiducal glands appear to have a different form and the spermathecae are larger. *Eminoscolex ruwenzorii* may be thus defined:—

Eminoscolex ruwenzorii.

Length 200 mm. ; *breadth* 4–5 mm. *Ventral setæ* rather further apart than lateral, the proportions being 6 : 5. *Ventral setæ* of nine anterior segments enlarged. *Male pores* xvii./xviii., with thickened posterior margins (a penis ?); *female pores* xii./xiii., in line with seta b. *Copulatory-gland pores* on xiii./xiv. *Proximal ends* of four sperm-ducts widened and twisted into a closely adpressed coil. *Spermiducal gland* of only moderate length, with narrow muscular duct. *Spermathecae* more or less spherical, not conjoined.

4. Some Notes on Hybrid Bears.

By HENRY SCHERREN, F.Z.S.

[Received April 9, 1907.]

The fact that some months ago the Hon. Walter Rothschild purchased from Stuttgart and deposited in the Society's Gardens two hybrid Bears attracted attention to these animals, and induced me to look into the literature on the subject. Bears play a considerable part in folk-lore; and one might have imagined there would be many references to cases of hybridity, seeing that these animals have been credited with carrying off women. The following story is quoted by Gesner¶ from Gillius:—

“De Philippo Cosseo Constantiensium sacris præfecto, ingenu-

* Michaelsen, Zool. Jahrb. (Abth. f. Syst.) xviii. p. 486.

† *Id.* MT. Hamb. wiss. Anst. xvii.

‡ *Id. ibid.* xiv.

§ *Id.* “Regenwürmer,” in Deutsch-Ost-Afrika, p. 9.

|| Michaelsen, Oligochaeta in ‘Das Tierreich,’ Lief. 10 (Berlin, 1900), p. 407.

¶ ‘Historiæ Animalium,’ lib. i., p. 1068.

arum artium perstudioso, qui hoc ipsum se ex bono autore cognitum habere, mihi valde affirmavit: usum accepi ex montibus Allobrogum puellam in speluncam rapuisse, eandemque venereo complexu et osculatione prosecutum fuisse: atque ex pomis agrestibus, quæ permulta quotidie in speluncam inferret maturiora studiose delegisse, eidemque edenda amatorie dedisse, ac nimirum cum ad cibi inquisitionem proficisceretur, ingenti saxo speluncam, ne puella exire posset, ocludisse. Cum autem post longam inquisitionem parentes ursinum latibulum præterirent, suam peradolescens animadvertisse, saxoque ægre depulso, eam recepisse."

Similar stories have been told from remote antiquity of the anthropoid apes, and among them cases of hybridity, though suspected, are not established. I am acquainted with no case of hybridity in Bears in a wild state, and with but few in zoological collections. Dr. Brandes has suggested that the absence of records of wild hybrids is due to the fact that the species occupy regions widely separated; and that the paucity of menagerie-bred hybrids may be accounted for by the fact that there is always the fear that putting two individuals in one cage may have bad results, since a fight between two adult bears is sure to terminate fatally for at least one of the combatants.

In an article in the 'English Cyclopædia' Broderip refers to a belief in hybrids between the dog and the bear; and says that an account of such a creature was given in the 'Histoires Prodigieuses extraites de Plusieurs Fameux Auteurs Grecs et Latins, sacrez et prophanes, divisées en Cinq Tomes, le premier par P. Boaistuau: Tome Premier. Paris, 1582.' That author illustrated his article with a figure of the animal, of which a copy is reproduced in the Cyclopædia. This animal (Broderip writes) the author states he saw in England in the reign of Elizabeth, but the probability is that he was deceived by the English bear-wards and dog-fighters of Elizabeth's time, and that some dog selected for its bear-like appearance in certain points, an appearance aided by cropping the ears and tail and other skilful artifices, was palmed upon him and upon others as a hybrid engendered between a dog and a bear. As Boaistuau's book is rare, I have transcribed the passage from the copy in the British Museum Library (ed. 1566, ch. xxix.):—

"Cest animal monstrueux, que tu vois figuré au commencement de ce chapitre, est engendré d'un Dogue d'Angleterre et d'un Ours: de sorte qu'il participe de l'une et de l'autre nature: Ce qui ne semblera estrange à ceux qui ont observé à Londres comme les Dogues et les Ours sont logez en de petits cachots, les uns aupres des autres: et quand ils sont en leurs chaleurs, ceux qui sont deputez pour les gouverner, enferment une Ourse et un Dogue ensemble, de sorte que pressez de leurs fureurs naturelles, ils convertissent leur cruauté en amour, et de telles conjonctions nayssent quelquefois des animaux semblables à cestuy, encore que

soit bien rarement : entre lesquels i'en ay observé deux, qu'on avoit donné à monseigneur le marquis de Trans : l'un desquels il fist present à monsieur le Conte d'Alphestan, ambassadeur de l'Empereur : l'autre qu'il a faict amener en France, sur lequel i'ay fait retirer cestuy au naturel, sans que le peintre y ait rien obmis."

The first well-established case of hybridity in Bears appears to have occurred in the Society's Gardens*, between a Black Bear ♂ (*Ursus americanus*) and a European Brown Bear ♀ (*U. arctos*). Copulation was observed in May 1859, and on December 31st three cubs were born, "naked and blind, and about the size of a full-grown rat." One cub was carried by the dam in her mouth for a day or two; and as it disappeared it was supposed that she devoured it. At the age of five weeks the surviving cubs (♂, ♀) were "as large as a common rabbit. Their eyes began to open by this time; they were covered with a short thick fur, and were nearly black." This last observation is of some value, as it supports those of other authorities with regard to the coloration of the hybrid cubs following that of the male. Mr. Bartlett did not give the duration of life, but reference to the Occurrence Book shows that they died on Feb. 14, 1860.

The next case occurred in the Zoological Garden, Cologne, the male parent being a European Brown Bear (*U. arctos*) and the female a Grizzly Bear (*U. horribilis*). Prof. H. Alexander Pagenstecher, of Heidelberg, visited the Gardens in Paris, Lyons, and Cologne, and the following passage † occurs in his account of what he saw in the city last-named:—

"Von Raubthieren haben wir namentlich noch den Bärenzwinger, ausgezeichnet durch die jungen Bastarde vom gewöhnlichen braunen Bären und der grauen Bärin, welche in dem weiten Käfige trotz ihres gewaltigen Körpers mit solcher Schnelligkeit umherrannte, dass man von der eminenten Gefährlichkeit des Thieres in der Freiheit eine genügende Vorstellung zu erlangen vermochte."

There seems to be no doubt about the event, but particulars were not entered at the time in the records of the Garden. Dr. Wunderlich, in reply to my enquiries, regretted that he could add nothing to the foregoing account, and informed me that no one now in the Garden remembered the hybrids.

Hanover Zoological Garden is said to have been the scene of the third case, about which, however, some doubt exists. Dr. Theodore Kottnerus-Meyer, writing on Mammalian Hybrids ‡, says:—

"In den achtziger Jahren . . . besass der Hannoversche

* A. D. Bartlett, P. Z. S. 1860, p. 130.

† 'Zoologischer Garten,' 1867, pp. 287, 288.

‡ 'Zoologischer Garten,' 1904, p. 61.

Garten auch eine Grislybärin (*U. ferox*) die in glücklichster Ehe mit einem Braunbären (*U. arctos*) lebte, und wiederholt von ihm mit Erfolg gedeckt wurde. Die Jungen glichen dem Vater und hatten ganz den Typus des Braunbären."

Dr. Schöff, who has been Director since 1893, can find no trace of these hybrids, but has kindly promised to make enquiries.

The hybrids now in the Society's Gardens were born in the Garden which formerly belonged to Herr Nill, who bred hybrids between Polar and Brown Bears since 1874. His original stock consisted of a Polar Bear ♂, about $3\frac{1}{2}$ years old, and a Brown Bear ♀, a year younger. Having shown a friendly disposition to each other, playing as freely as they could through the bars, the experiment was made of putting them together, with the best results. In the summer of 1875 copulation was observed, and on January 9, 1876, two cubs were thrown, which were quite white. The colour, however, soon changed to a silver grey with a bluish tinge, and by the summer to dark brown with a similar tinge. There was no sign of the whitish neck- or nape-band, generally more or less noticeable in young Brown Bears; and by the end of the summer the coats were yellowish white. Two other cubs were born from the same parents on January 14, 1877, and the following report on them by Dr. Steudel and Herr E. v. Martens* is worth quoting in full:—

"Die beiden halbjährigen sind gegenwärtig vorherrschend graubraun, doch etwas ungleichmässig, die Kehlgegend in ihrer ganzen Ausdehnung auffällig hell fast weisslich. Die beiden anderthalbjährigen sind viel heller, Rücken und Seiten isabellfarbig, ein dunkelbrauner Mittelstreifen, bei dem einen ziemlich breit über den ganzen Rücken sich erstreckend bei dem andern nur in vorderen Theil schwach angedeutet, Oberseite des Kopfes hellbraun, Unterseite des Kopfes und Rumpfes weisslich, alle vier Extremitäten noch ziemlich dunkelbraun."

Two other lots of cubs were born from the same parents; and then one of the female hybrids was paired with the Polar Bear (her sire), and produced in succession several litters of three-quarter blood Polar Bears. The old female Brown Bear was given a mate of her own species, and produced normal cubs. It was established that the half-blood Polars were fertile *inter se*, as were the females with a pure Brown male.

The original Polar Bear died in the summer of 1898, and the female Brown Bear, which had thrown more than fifty cubs, was shot when the Garden was closed in 1906. At that time the hybrids (Polar and Brown) now in the Society's Gardens were purchased. Both are females, one half- and the other three-quarter Polar. The half-blood was born in December 1893, and

* 'Zoologischer Garten,' 1877, p. 402.

in December 1897 she threw the three-quarter blood cub to her own sire, the original Polar Bear, which it may be mentioned was obtained by von Heuglin's expedition.

In his last Guide (undated) to his little Garden, Herr Nill thus described the animals:—

“Während die Bastardmutter gelblichbraun mit helleren Abzeichen am Kopf und dunkleren auf dem Rücken und an den Füßen gefärbt ist, in den Körperformen aber noch zwischen Eis- und Braunbär steht, hat das dreiviertelblütige junge Tier vollständig die Gestalt und die Farbe des Eisbären angenommen und ist nur noch durch eine ganz hellbraune Schattierung längs des Rückens von einem solchen zu unterscheiden.”

Since then the young has grown darker, but were it possible to put her to a Polar Bear her cubs would probably be indistinguishable from those of the true *Ursus maritimus*. When I visited the pretty Garden at Halle-an-der-Saale last summer, the Director, Dr. Gustav Brandes, drew my attention to a cage containing a male Polar Bear and a female Brown Bear, and remarked that he had reason to believe they had produced young, which had been eaten by the dam. Early in February of this year he kindly informed me that cubs had been born, and the mother was caring for them. The animals were put together in 1902; copulation was observed in the summer of 1904, and at the close of the year the female withdrew into the inner compartment, remaining there for some days, but it was impossible to be certain that a birth had taken place, though the condition of the mamma rendered that probable. Pairing again took place in the summer of 1905, and there was the same uncertainty as to results. Dr. Brandes, however, assumes that in both cases cubs were born and eaten by the dam, whose instinct of fostering her young had not developed. In July 1906 pairing was observed, and on January 23, 1907, three white cubs were born. Lest I should unintentionally misrepresent Dr. Brandes' view I quote a passage from his letter textually:—“Mich freut es, dass ich wieder einmal meine Ansicht, dass sich das Brutpflegeinstinkt erst entwickeln muss, mal wieder glänzend bestätigt hat. Man kann sich keine bessere Mutter denken, und daher hat sie doch zweimal die Jungen gefressen.” By the end of February the dark dorsal stripe was present. These cubs will be kept under close observation, and photographed from time to time, in order to illustrate the colour-changes in the coat. For more than a year Dr. Brandes has kept a Korean female Black Bear (*Ursus torquatus*) with a pair of Sloth Bears (*Melursus ursinus*), and they have lived peaceably together, though no young have been produced.